

CLAIMS

1. (Amended) A reception method for detecting at least one information signal modulated on at least one repetitive waveform, the method comprising:
 - coupling the at least one repetitive waveform out of a communication channel, the at least one repetitive waveform having at least one predetermined period, and
 - combining at least a first time-domain portion of the at least one repetitive waveform with at least a second time-domain portion of the at least one repetitive waveform to generate at least one coherence signal indicative of the at least one information signal,
the improvement comprising:
 - at least one time-offset step incorporated into the step of combining the time-domain portions at least first time-domain portion with the at least second time-domain portion, the at least one time-offset step adapted to provide the time-domain portions at least first time-domain portion or the at least second time-domain portion with at least one time offset relative equal to at least one signal period of the at least one of the repetitive waveform waveforms.
2. (Previously Amended) The reception method of claim 1 wherein the communication channel includes at least one of a waveguide and a free-space propagation medium.
3. (Original) The reception method of claim 1 wherein the at least one repetitive waveform includes a plurality of repetitive waveforms, each of the plurality of repetitive waveforms having similar values of center frequency and bandwidth.
4. (Amended) The reception method of claim 1 wherein the repetitive waveforms at least one repetitive waveform includes a plurality of repetitive waveforms wherein each of a plurality of the repetitive waveforms is provided with a different period.
5. (Amended) The reception method of claim 1 wherein the at least one repetitive waveforms waveform have a bandwidth comprised of at least one of a set comprising

a continuous spectrum, a comb of spectral lines, a single spectral line that is randomly modulated, and a single spectral line that is pseudo-randomly modulated.

6. (Amended) The reception method of claim 1 wherein the ~~repetitive waveforms at least one repetitive waveform~~ includes at least one noise waveform.
7. (Amended) The reception method of claim 1 wherein ~~each repetitive waveform the at least one repetitive waveform~~ is modulated by a plurality of information signals.
8. (Previously Amended) The reception method of claim 1 wherein the at least one repetitive waveform is phase modulated with the at least one information signal.
9. (Amended) The reception method of claim 1 wherein the combining step includes at least one interferometry step wherein at least one of the ~~time-domain portions at least first time-domain portion and the at least second time-domain portion~~ is delayed and combined with at least one other time-domain sample.
10. (Amended) The reception method of claim 9 wherein the delay corresponds to the ~~waveform period at least one predetermined period~~.
11. (Amended) The reception method of claim 9 wherein the ~~time-domain portions at least first time-domain portion and the at least second time-domain portion~~ that are combined are consecutive portions of the at least one repetitive waveform.
12. (Amended) The reception method of claim 9 wherein the ~~time-domain portions at least first time-domain portion and the at least second time-domain portion~~ that are combined are non-consecutive portions of the at least one repetitive waveform.
13. The reception method of claim 9 wherein the at least one interferometry step is performed by at least one of a Michelson interferometer and a Mach-Zender interferometer.

14. (Amended) The reception method of claim 1 wherein the combining step includes frequency shifting at least one of the ~~time-domain portions~~ at least first time-domain portion and the at least second time-domain portion.

15. (Amended) A reception method for separating information signals modulated onto a plurality of repetitive waveforms having different periods, the method comprising:

- coupling the waveforms out of a communication channel,
- generating a plurality of time-domain samples of the received waveforms,
- correlating the plurality of time-domain samples,

the improvement comprising:

- at least one time-offset step incorporated into the step of generating a plurality of time-domain samples, the at least one time-offset step adapted to provide the time-domain samples with at least one time offset ~~relative~~ equal to at least one signal period of at least one of the repetitive waveforms.

16. (Amended) The reception method of claim 15 wherein ~~the steps of generating a the~~ plurality of time-domain samples and ~~correlation of~~ correlating the samples is performed by an interferometer.

17. (Original) The reception method of claim 15 wherein the step of coupling the waveforms out of a communication channel is performed by an array of receiving elements.

18. (Previously Amended) The reception method of claim 15 further comprising a step of frequency shifting at least one of the time-domain samples prior to correlating the samples.

19. (Amended) The reception method of claim 15 wherein ~~the combining step~~ correlating provides for correlating the time-domain samples that are consecutive samples of at least one of the repetitive ~~waveform~~ waveforms.

20. (Amended) The reception method of claim 15 wherein the ~~combining step correlating~~ provides for correlating the time-domain samples that are non-consecutive samples at least one of the repetitive waveforms.

21. (Amended) In an electromagnetic-wave communication system, a transmission method for transmitting at least one information signal modulated on at least one of a plurality of repetitive waveforms, the method comprising:

- modulating at least one information signal onto at least one of the plurality of repetitive waveforms,
- coupling the plurality of repetitive waveforms into a communication channel, the improvement comprising:
- generating the ~~at least one~~ plurality of repetitive waveforms, each of the plurality of repetitive waveforms having at least one predetermined period and a time offset equal to or greater than the at least one predetermined period.

22. (Original) The transmission method of claim 21 wherein the modulating step includes one or more of a set comprising phase modulation and frequency modulation.

23. (Previously Amended) The transmission method of claim 21 wherein the generating step includes generating a repetitive noise waveform.

24. (Previously Amended) The transmission method of claim 21 wherein the generating step includes generating a repetitive noise waveform having at least one component being frequency-offset from at least one other component.

25. (Original) The transmission method of claim 21 wherein the generating step includes generating a plurality of repetitive waveforms having similar values of center frequency and bandwidth.

26. (Previously Amended) The transmission method of claim 21 wherein the generating step is adapted to generate a plurality of repetitive waveforms having different periods.

27. (Original) The transmission method of claim 21 wherein the generating step includes generating repetitive waveforms that have a bandwidth comprised of at least one of a set comprising a continuous spectrum, a comb of spectral lines, a single spectral line that is randomly modulated, and a single spectral line that is pseudo-randomly modulated.

28. (Amended) A transmitter for transmitting at least one code-length division multiple access signal, the transmitter comprising:

- a modulator capable of modulating at least one information signal onto at least one portion of at least one period of the at least one repetitive waveform,
- a coupler capable of coupling the modulated information signal into a communication channel,

the improvement comprising:

- a repetitive-waveform generator adapted to generate the at least one repetitive waveform, the at least one repetitive waveform having at least one predetermined period and a time offset equal to or greater than the at least one predetermined period.

29. (Original) The transmitter of claim 28 wherein the modulator phase modulates the information signal onto at least one portion of at least one period of the repetitive waveform.

30. (Previously Amended) The transmitter of claim 28 wherein the waveform generator is adapted to generate a repetitive noise waveform.

31. (Previously Amended) The transmitter of claim 28 wherein the waveform generator is adapted to generate a plurality of repetitive waveforms having similar values of center frequency and bandwidth.

32. (Previously Amended) The transmitter of claim 28 wherein the waveform generator is adapted to generate a plurality of repetitive waveforms having different periods.

33. (Previously Amended) The transmitter of claim 28 wherein the waveform generator is adapted to generate a plurality of repetitive waveforms having at least one frequency offset.

34. (Previously Amended) The transmitter of claim 28 wherein the waveform generator is adapted to generate repetitive waveforms that have a bandwidth comprised of at least one of a set comprising a continuous spectrum, a comb of spectral lines, a single spectral line that is randomly modulated, and a single spectral line that is pseudo-randomly modulated.

35. (Amended) A receiver for receiving at least one code-length division multiple access signal, the receiver comprising:

- an input coupler coupled to a communication channel capable of receiving a plurality of repetitive waveforms having at least one predetermined period, and
- a combiner coupled to the input coupler, the combiner capable of combining a plurality of time-domain samples of the received waveforms for generating a coherence signal indicative of at least one information signal modulated onto at least one of the plurality of repetitive waveforms noise signals,

the improvement comprising:

- a time-offset system coupled to the combiner adapted to provide at least one of the samples with at least one time offset relative equal to or greater than the at least one predetermined period of the repetitive waveforms.

36. (Original) The receiver recited in claim 35 wherein the input coupler includes an array of receiving elements.

37. (Amended) The receiver of claim 35 wherein the combiner combines is adapted to combine consecutive time-domain samples of the repetitive waveform waveforms.

38. (Amended) The receiver of claim 35 wherein the combiner combines is adapted to combine non-consecutive time-domain samples of the repetitive waveform waveforms.

39. (Original) The receiver recited in claim 35 wherein the combiner includes an interferometer.

40. (Previously Amended) The receiver of claim 39 wherein the interferometer includes at least one of a set comprising a Michelson interferometer and a Mach-Zender interferometer.

41. (Amended) The receiver of claim 39 wherein the interferometer includes at least one of a set comprising a Michelson interferometer and a Mach-Zender interferometer a frequency shifter configured for frequency shifting at least one of the plurality of time-domain samples.

42. (Amended) A remote-sensing method for detecting changes to at least one repetitive waveform, the method comprising:

- coupling the at least one repetitive waveform out of a communication channel, the at least one repetitive waveform having at least one predetermined period, and
- combining at least a first time-domain portion of the at least one of the repetitive waveforms waveform with at least a second time-domain portion of the at least one of the repetitive waveforms waveform to generate at least one coherence signal,

the improvement comprising:

- at least one time-offset step incorporated into the step of combining the time-domain portions, the at least one time-offset step adapted to provide the time-domain portions with at least one time offset relative equal to at least one signal period of the at least one of the repetitive waveforms waveform.

43. (Amended) A remote-sensing receiver for receiving at least one repetitive waveform, the receiver comprising:

- an input coupler coupled to a communication channel capable of receiving a plurality of repetitive waveforms having at least one predetermined period, and
- a combiner coupled to the input coupler, the combiner capable of combining a plurality of time-domain samples of the received plurality of repetitive waveforms for generating a coherence signal,

the improvement comprising:

- a time-offset system coupled to the combiner adapted to provide at least one of the samples with at least one time offset relative equal to or greater than the at least one predetermined period of the plurality of repetitive waveforms.

44. (Previously Added) The remote-sensing receiver recited in claim 43 further comprising:

- a transmitter adapted to transmit at least one repetitive waveform, the transmitter comprising:
- a repetitive-waveform generator adapted to generate the repetitive waveform having at least one predetermined period, and
- a coupler capable of coupling the modulated information signal into a communication channel.

45. (Previously Added) The receiver of claim 43 further comprising a frequency shifter for frequency shifting at least one of the time-domain samples.